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THOMAS H. McCOLLIN, Managing Editor.

PHOTOGRAPHY IN CRIMINAL JURISPRUDENCE.

NO sooner was photography discovered than it was recognized as one of the greatest aids to the police authorities, and became a medium for the detection of criminals and evil doers, and the consequent prevention of crime. To obtain an exact likeness, and the duplication of prints or pictures, which could be sent out broadcast over the country at a comparatively small cost, thus familiarizing the various local police authorities with their lineaments, was a menace to the criminal classes, greater than anything which had so far been discovered for their suppression.

The criminal classes were not slow to recognize this fact, and took every means to circumvent a successful portrait being taken of themselves, while the great aim of the authorities was to obtain a serviceable portrait by which the subject might be identified at sight beyond a doubt. That this proved a difficult matter will be apparent to any one who visits a "Rogue's Gallery," as the collection of criminal portraits are called in police parlance, and which may be seen in all large cities and towns. It will be seen at a glance that, as portraits, these pictures are not a success, almost all of them having been unwilling sitters and distorted their features, and as a result are almost valueless for the purposes for which they are intended.

With the advent of the dry plate, instantaneous, and Blitz photography of the present day, a new era opened, of which the various police bureaus were not slow to avail themselves, where formerly in "wet plate" days the criminal was taken to the "skylight" of the photographer who had the contract with the department, and which was often squares away from headquarters, and the attempt at portraiture would end in failure, even after a physical struggle with his guardians.

The writer recollects one instance in which it took four stalwart officers to hold a prisoner while the "artist" got his picture. The "cabinet" not only showed the face horribly distorted, with eyes shut and tongue out, but also the hands of one officer holding his ears, the second officer holding him by the hair, while the hands of the third showed as he was choking the prisoner. Under the new regime all such scenes fall away; the subject is now taken instantaneous when he least expects it, a perfect front and profile being taken at the same instant, showing not alone the features at rest, but also the subject's natural position.

This applies especially to the capitals of Germany and France, while the old system is still more or less in vogue in this country and England. In the latter

country much dissatisfaction, photographically speaking, has lately cropped out with the Scotland yard authorities for their adherence to the old methods, and on more than one occasion the question was brought up in the House of Commons, so far, however, without bringing any response from the Home Secretary.

In France, the photographic methods, which are extraordinarily accurate, are supplemented with a series of measurements known as "Systeme Anthropométrique." The photographic department of police headquarters in Paris now consists of a series of rooms, one for making the exposure, into which opens a waiting-room, and several dark rooms. The main room is so arranged with mirrors that face and side views are taken at the same time on the same plate. In connection with this department are facilities for making silver or bromide prints, mounting, etc.; all work and detail is done within the department without any aid or knowledge of outside parties.

It is, however, in Berlin where the highest development of police photography has been reached. Formerly the work was done by the well-known firm of Zielsdorf & Adler. Now it is done by employees of the department in the new Präsidial building erected in the "Alexanderplatz," where a series of rooms connected with the criminal department have been set aside for photographic purposes, and are so constructed that portraits can be taken at any hour of the day or night, the illuminant being Blitz Pulver, and it is done so quickly that the accused introduced into the chamber or passage-way on his way to a hearing is actually photographed before he even has presentiment of what has taken place. This is accomplished as follows: When the subject comes to within two or two and a half metres of the concealed cameras, a gum bulb is pressed by the operator, who is also concealed. This mere pressure not only opens the shutter but simultaneously ignites two Blitz flash lamps, which are placed at right angles in front, about six feet to the right and left of the subject. A simple pressure of the pneumatic bulb, a flash, and before the subject can get over his surprise, he is led out of the room, while the plate is developed and fixed in the adjacent dark room. It is said that the exposures obtained by this process have been almost universally successful.

JULIUS F. SACHSE.

A WORD IN REPLY.

OUR esteemed friend and colleague, the editor of the *British Journal of Photography*, makes some strange statements in a leader entitled, "Development by Means of Vapors," which appears in the number for February 21st.

It seems that he has again availed himself of our columns and reprinted the article on "Development with Pyogallic Acid in Connection with Ammonia in Vapor," by Theodore H. Luders. The editorial strictures on this article are too lengthy to be reproduced in full, but the following will give an idea of the character of the article:

"Mr. Theo. H. Luders commences by premising that 'the use of vapors in picture making'—we presume he means *photograph* making—'was one of the first methods;' and, after briefly referring to the Daguerreotype process, proceeds to say that there does not seem to have been any further application of vapor since then,

except for fuming silvered albumen paper. In that statement the writer exhibits what we think his own compatriots especially will deem a singular ignorance of facts."

As "compatriots" of Mr. Luders we must say here very emphatically that not only do the points referred to *not* betray ignorance of facts, but on the contrary show a very good acquaintance on the part of Mr. Luders with the history of alkaline development in its practical aspects.

Among the numerous lessons that the practice of the art of photography has taught us we have laid the following one particularly to heart,—namely, that while it is one thing to make an experiment successfully in amateurish fashion, it is quite another thing to continue the successful experiment on the large scale required by regular photographic business. We mean by this to say that the experience of every *successful* photographer who ever developed a plate has hitherto been directly in favor of the use of alkalies in solution, not in vapor; and consequently, when Mr. Luders asserts that the use of vapors in photography has been limited to the Daguerreotype process and the fuming of paper, he is quite correct so far as practical photography is concerned, and we fully endorse the very points selected by the editor of the British journal for unfavorable comment.

It is quite pathetic, also, to observe the pains taken by our genial friend, the editor of the British journal, to instruct us all concerning the famous discovery of Mr. Anthony, of New York, concerning the development of Tannin plates by the vapor of ammonia. The discovery of alkaline development is due to the labors of Mr. Anthony in conjunction with Mr. Eugene Borda, one of Philadelphia's old-time amateurs.

Thanks, Mr. Editor; we have known all of this for some time past.

THE METRIC SYSTEM.

THE article in your last, on the metric system, does not seem to me to set forth all the facts pertinent to the question.

The personal equation matter is not so one-sided as represented. *A priori* the units of the metric system are just as easy to form thought elements as those of the other, and when formed the translation required is from the English units to the metric for comprehension, and not *vice versa* as assumed. This is the case with most of our German friends, who form no small part of our scientific population. But, further, the metric system is used by the whole civilized world, except English speakers, and among the latter is used by all chemists. It is actually in universal use by chemists throughout the world. This is a good reason why all arts dependent on chemistry should use it, such as photography, medicine, and pharmacy. And it modifies the personal equation, because most English chemists think in grams. In

my own case, I always translate the English units, not the metric. I know many chemists and physicians who do likewise.

It may to some look like an extravagant statement, but it is simple truth, without exaggeration, that the English system is a relic of barbarism that impedes general education.

It has been calculated by teachers, published by the Metric Bureau, and never traversed in the writer's knowledge, that the substitution of the metric for the ordinary system would save a year of the school-life of every child. What labor-saving machine ever invented is equal to this. There are about fifty factors to be memorized in our system. In the metric but one. And this is the same as our ratio of notation. Hence, as a practical matter of education, the whole time spent in learning by heart tables of weights and measures is wasted.

In a piece of work now in progress here, in which a comparison of many analyses is required, in which the results have been mostly published in some form of the old system, because of supposed public utility, it will cost hundreds if not thousands of dollars to bring them into a common form adapted for mutual comparison with each other. Precisely the same confusion exists in photographic formulæ, as the writer well knows from a late attempt to compare a number. Mr. Wallace's article cites the unity of minim and grain as an advantage, but it is the sole instance of correlation between weight and measure in the old system, while every measure and weight corresponds in the metric. Why use a bad thing when a good one is at hand?

I think very few chemists, at least of the younger class, would accept the statement of "uncertainty in rapid calculation." On the contrary, it is the metric system that would be preferred because of the greater rapidity and certainty of calculation.

Definite ideas of weights and measures come by actual use, and not by thinking about them. And if the use is begun early in life, the idea is formed more easily and perfectly than when commenced later.

Our professional schools are responsible for the continued toleration of the "American" system. At the present time, nothing but the metric system should be taught in such schools, and every druggist should be required to possess a set of metric weights.

This would not interfere with the practice of those too old to change. The old system is well called the American system. No other nation uses it. The Imperial pound and gallon are the officinal measures of England, and the pound Troy is no longer in English text-books, while the Winchester or American gallon disappeared long ago. When we use imported measures or graduates they are not the same as ours.

A small part of the metric system suffices for the photographer. The following table represent a form the writer has found well adapted for professional students.

1000 millegrams make one gram.
1000 grams or cubic centimeters make a kilo or liter.
1000 kilos make one ton.
65 millegrams make one grain.
15½ grains make one gram.
31 grams make one ounce Troy.

The last table is only because of our present transitional state. Millegrams, grams and kilos are weights, and the metric ton is 2204 pounds, between our long and short ton. Cubic centimeters (usually written c.c.) and liters are measures. The actual weight of any measure of liquid, if its Spec. Grav. is known, is got by multiplying the corresponding weight by the S. G.

In writing metric formulæ, the point should stand between the grams and millegrams. Three figures on the right of the decimal point are millegrams, all on the left grams. In the arts the millegram is never divided.

The present Pharmacopeia uses parts by weight. The Washington Camera Club print their formulæ in parts per hundred, thus:

Hydroquinone, ... 2.25 per cent
(In metric terms it would be 22.500.)
Sodium sulphite, C. P. . . . . 10 per cent.
(In metric terms it would be 100.000.)
Distilled water, ... 87.75 per cent.
Make up to one liter.

POTASH SOLUTION.

Potassium carbonate, C. P. . . . . 15 per cent.
(In metric terms it would be 150.000.)
Sodium sulphite, C. P. . . . . 10 per cent.
(In metric terms it would be 100.000.)
Distilled water, ... 75 per cent.
Make up to one liter.
For use dilute No. one, half, add 3-6 drachms, or 10-20 c.c. potash.

The change from per cents. to grams needs only a change of the decimal point. Hence no advocate of the metric system has any objection to a percentage system. Duplex graduates are for sale with c.c. on one side, and fluid ounces on the other, and the c.c. are good for percentage. Chemists generally make up their formulæ on a basis of one liter, *i.e.*, 1000 c.c., as a convenient quantity.

Another change that seems to me greatly needed in the mode of stating photographic formulæ, is to give the strength actually used, and not that of the stock-bottle. Every man with brains enough to be a photographer at all, can make his stocks of a degree of concentration to suit his convenience, or the size of his bottles. What must be known is the strength of the solution actually applied. Much space would thus be saved in description, and different formulæ could be compared directly, which now requires many figures. Thus the Washington formulæ as used is half the given formulæ. Or the water can be doubled.

I am pretty sure that any one who will actually use the graduates and weights of the metric system in compounding solutions for a short time (not attempt to translate equivalents) will soon find them satisfactory.

W. H. SEAMAN, M.D., *Washington, D.C.*

OUR illustration (a Blitz picture) is the work of Mr. H. Parker Rolfe, of Philadelphia, who is very successful in taking fine flash pictures at night with Blitz-Pulver. There are several different subjects, all, however, of the same little boy. In one the little fellow is just emerging from an inner room, with the parted curtains still in his hands; he is surprised at the bright flash of light; the camera has, however, done its work, as you see him just there with a natural expression of surprise. Another when he is sitting in a big easy chair with his favorite cat in his arms, but they are caught with the flash camera before Miss Puss has time to make her hasty departure.

A SEASONABLE SUGGESTION.

THE first three months of the year are in this latitude generally supposed to be the least favorable for the amateur photographer, and the exercise of his hobby. The fields and pastures are black; hillsides and ravines, so inviting in summer, are now bleak and desolate; and the trees, under whose grateful shade we rested during our summer outings, are now leafless and bare. Christmas-tide, with its joys, is past and gone; the various Christmas trees, with their gaudy dressings, our presents, groups, and visitors, have been "taken" by Blitz or Sun, and most amateurs count their winter's work completed. Some enthusiastic votaries have kept their practice alive by copying pictures, old documents, maps, seals, or objects of virtu or antiquity, and other subjects, not forgetting sundry interiors; still, as such work partakes more of the dull routine of labor than pleasure, the interest in photography has naturally more or less flagged, while the amateur sets aside his outfit until spring shall come, when he can again strike out in pastures new, and find food for his camera.

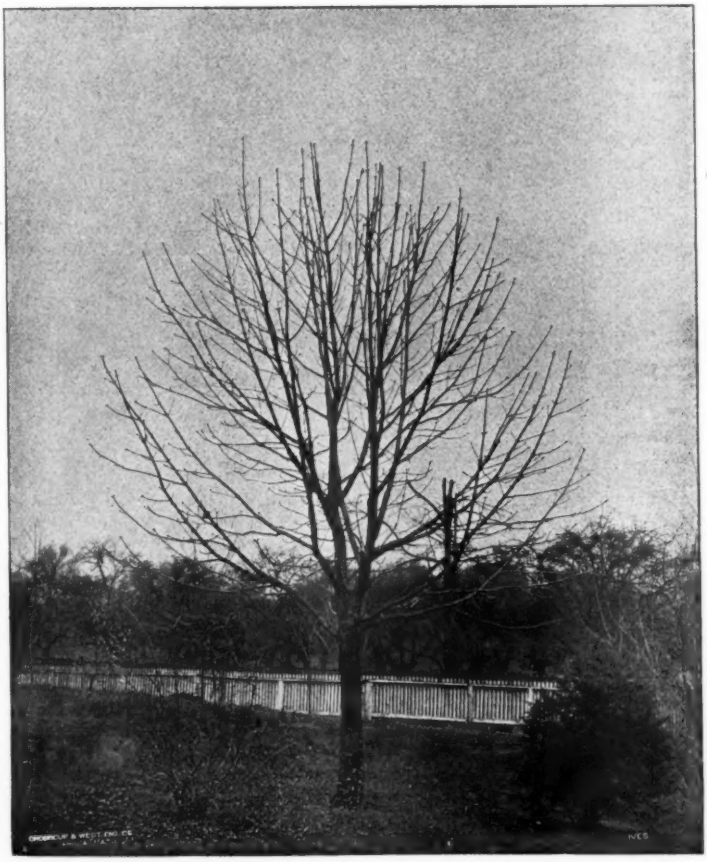
To the "photographic studiosis," as a German contemporary designates the enthusiastic amateur, there is no need of waiting until the country is again clothed in pristine verdure. It is this class whose especial attention we would call to our illustration, while our suggestions will apply to the whole guild of camera carriers.

There are but few persons, if we except the arborist, who have any idea of the difference existing in tree structure, or the diversity in shape and growth of the limbs of the various species.

Nothing will surprise the intelligent observer more than the marked difference between our common trees, which we have known since childhood, without taking special notice of their peculiarities, as can be seen by a comparison of 8 or 10 photographs of as many different varieties, the negatives being made at the present season, while the subject is bare and leafless.

The wide divergence in characteristics of growth,—shape, bark, etc.,—as shown by such comparison, will prove a revelation to many a well-informed person, and opens a wide and interesting field to the amateur photographer and student.

In our suggestion of this study we would advise a selection of marked, well-grown specimens, that can be taken on the plate so as to preserve all the features of the tree without being secondary to any surroundings. It makes no matter whether the subject be a monarch of our primitive forest, or some favorite specimen of orna-



A TREE STUDY

NEGATIVE BY J. F. HACHEE. IVES PROCESS

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mental growth, introduced from foreign climes; each individual variety has its peculiar characteristics. Photograph the tree in a strong light so as to bring out the detail of the bark, etc. It would be well to carefully note the distance from the butt of the tree, or the point of the compass, if there is no other way of locating the spot where the tripod was set; this note is for reference in the future, so that after the spring has opened, and the trees are once more clad in their verdure, another trip can be made to the same spot, and a plate made of the same tree in its glory. This study can be further supplemented by photographing the tree while the buds are bursting, when the leaves are out, and then again in the fall when the leaves are either in their autumn glory or after they are brown and falling, using orthochromatic plates; further, if above suggestion be carried out, after the leaves have again fallen a fifth plate can be taken of the same subject, and then compared with the first plate; it will show the marked changes or growth which has taken place within the year, and which are not perceptible to the eye.

It will be seen that for these comparative plates to be of value great care should be taken to set the camera at the same point for the different exposures.

To any amateur having a taste for such research and experiment, we would point out the interesting groups of flowering trees, where not alone the tree structure, but the flowers, the leaves, and the fruit all tend to form an interesting group of subjects for the camera.

Take, for instance, the common Horse Chestnut (*Æsculus Hippocastanum*), a large symmetrical tree. In a photograph taken at the present time, we would have the structure or framework of the tree; the next plate we would suggest when the tree is in blossom, covered with a wealth of erect spikes or panicles of flowers, which stand out in bold contrast with the bright green foliage; then for a third plate, the same subject after the fruit is well formed, and the foliage has reached its fullest development.

Any one who takes up the study of this subject will also find the bursting leaf-bud, the young leaf, the flowers separate and in panicle, the developed leaf, the green fruit burr, as well as the burr when opened by the frost, exposing the ripened fruit, all picturesque subjects for the camera.* A series of photographic studies of this kind, carefully executed, would form an album far more interesting and instructive than the ordinary view or portrait album, so common and so listlessly gone over by the visitor to whom it is shown, and who for politeness sake goes over page after page, without noticing what the pictures represent.

In the same group of trees with the example mentioned, we would call attention to the Catalpa (*C. Syringæfolia*), with its large heart-shaped leaves, and large pyramidal clusters, a foot long, of white and purple flowers; the Paulownia (*P. Imperialis*), a magnificent tropical looking tree, with leaves twelve to fifteen inches in diameter, and large clusters of lilac flowers; the magnificent native "Tulip Poplar" so called (*Liriodendron Tulipifera*), with its erect growth, broad, glossy, fiddle-shaped leaves, and beautiful tulip-shaped flowers and curious seed-

* The leaves, buds, flowers, and other detail are pinned against a white or neutral tint background, and focused on the plate as large as possible without crowding the plate. In a future paper we trust to be able to lay before our readers the results of some of our experiments with leaf structure, representing trials extending over the period of several years.

pods; not forgetting the Magnolias, Conspicua, Acuminata, but especially the "Macrophylla," or large-leaved, with leaves two feet in length, and a profusion of dull white flowers, of the size of a man's hat. These specimens will suffice for one group.

Then we have the various native forest trees, such as the Oak (*Quercus*), the Maples (*Acer*), Ash (*Fraxinus*), Locust (*Robinia*), Elm (*Ulmus*), Linden (*Tilia*), Poplar (*Populus*), Gum (*Liquidamber Styraciflua*), and many others, all having characteristics which may be plainly shown with the camera.

The various fruit trees, Cherry, Peach, Plum, and Apple, all form beautiful subjects. In connection with this group of subjects, we will state that on one occasion when we asked a gentleman, who has one of the largest collections of lantern slides in the country, the question, which he considered the finest slide in his collection, he unhesitatingly answered, "An apple tree in full blossom." He further volunteered the information that he had eight slides of this subject made from as many different negatives.

Our field of study can be extended to the large family of flowering shrubs, or minor trees, as the Dogwood (*Cornus*); the weeping trees, as the Ash, Beech, Birch (*Pendula*), etc.; the Rose of Sharon (*Hibiscus Syriacus*), Hydrangea (*H. Paniculata Grandiflora*), Lilac (*Syringia*), Purple Fringe (*Rhus Cotinus*), and many others.

It will be seen by reference to above list (although not a hundredth part of what we might have made it) how great this field is for study and development, and wel worthy of the attention of all intelligent amateurs, especially to the lady votaries of our art; and this independent from the fact that it would be the means of leading many persons to a closer study of the secrets and beauty of nature.

At the same time we cannot refrain from cautioning the neophyte, if he wishes to take up this study as above suggested, from attempting too much at the start; it is better to complete two or three sets, thoroughly and correct, than undertake a dozen or more subjects, and complete none.

The plan pursued by the writer is first to select the specimen tree; then after a satisfactory position for the camera has been obtained, plumb the camera with a plumb-line, the same as a surveyor's level, then drive a large peg directly under the centre,—this securely marks the location for any subsequent exposures,—then level the camera, pointing as near the centre of the tree as possible; the centre can also be marked by tacking a small piece of white fabric on the tree on a level with the lens.

Our illustration, a young Horse Chestnut (*Æsculus Hippocastanum*), a specimen tree such as is within the reach of almost any one, whether in the city or country, is purposely selected to illustrate our suggestions, and is made on a 4x5 plate, to show the student that a large size camera is not essential for the purpose. Another matter of value, in connection with the subject of photographing leafless trees, is the preservation of the outlines of historic trees,—once landmarks in the history of our country or of its progress,—guide posts, which are getting less and less every year, as they succumb to the ravages of time, or fall prey to the rapacity of man. As yet there are still a number of such trees throughout this country, and the searching out and tracing the traditions clinging to these silent monitors by the roadside, or as they stand alone in the field like a grim sentinel, will be found an enjoyable divertisement.

We should be pleased to receive and note any results from our readers who may take up this special line of photographic study, as outlined in above suggestions.

Leopard, Pa., February, 1890. JULIUS F. SACHSE.

SOME POSSIBILITIES OF THE CONTINUOUS FILM.

SINCE the first introduction of the continuous sensitive film, many devices have been invented for the purpose of handling and using them, and some of these have been very successful, both mechanically and financially.

Other forms have been suggested in various papers and writings, but have never been manufactured and put on the market.

There are still others which, while probably undesirable for general use, might be very useful for special purposes of scientific investigation, legal evidence, or actual detective work, and for reporting for the press in pictures instead of words.

One of these devices, which is similar in some respects to the phonograph, and also to those self-registering instruments used for recording pressures, temperatures, barometric variations, etc., will be presented here with some of its possible uses.

Imagine first an extremely perfect photographic lens, covering a field of say one inch, and having a short, fixed focus, so far similar to a small hand camera.

For a sensitive surface, use a long flexible film with a device like a roll holder, but driven by clock work in such a way that the strip of film is in continuous motion except for an instant at the time that enough of the surface has passed to make a new space to expose another little circle or square. At the time of this stoppage an automatic shutter exposes the lens and the invisible impression is made.

Now suppose this little series of operations, all automatic, to be regulated in such a manner by clock work, as to constantly repeat in any desirable part of a second with a film of practically unlimited length, and we would have a complete record of any event or ceremony where sufficient light was to be had.

Among the many purposes for which such an apparatus could be used would be: Presentations, reviews, and for press reports, ship launches, surgical operations, movements of machinery, steamships and sailing vessels, deciding races with exact time, views of submarine explosions, and the movements of animals more continuous and complex than possible by the process of Muybridge, etc.

In developing and finishing there need be no difficulty that has not been already overcome, so we may go on to the use of the finished strips or ribbons of pictures.

With an arrangement like the electrical Tachyscope the little pictures might be projected in succession on the screen by using another clock work device to feed the strips, and the result would be a picture with motion, such as a vessel tacking and sailing off with the motions of the waves, etc.; or if it was a submarine explosion, there would first be the round swelling heave of the waters, then the white dome of spray mounting higher and higher, broken by scattering rock, etc., until its utmost height was reached, and the whole collapsed into a boiling cauldron of foam, from which in ever-widening circles the waves gradually subside to their original state, and our pictures we have to tell the story of the great work accomplished.

And so with artillery firing explosions of bombs against targets and in the earth and air, the evolutions of troops, and of war vessels, and many things impossible now to imagine or think of.

Then if a lantern slide can be made sufficiently perfect to allow of enlarging to twenty or thirty feet in diameter on the screen, a *perfect* negative of one inch in

diameter would admit of sufficient enlargement to make a useful picture, and the best view of many might be chosen, instead of having to be satisfied with the result of perhaps one shot at a moving object.

Perhaps this all seems theoretical and visionary, but there is no mechanical difficulty that could not be overcome; and as for the chemical and optical work, fully as difficult problems are solved every day.

When to the above we add the possibility of color photography, which none of us are willing to give up, it is within the limits of scientific possibility to make moving pictures in their natural colors.

This may never be accomplished by one person, but might be done by the combined efforts of a club or society with sufficient time at its disposal.

T. H. L.

ENLARGEMENTS.

IT is much more desirable to have large pictures than it is to make them, and if it is practicable to make small original negatives, and obtain enlargements from them which shall be as sharp and full of detail as the prints from the original negatives, much labor and trouble in the field would be avoided.

In order to consider the question of the value of an enlargement, and to estimate how near it may be considered to be comparable with a print from an original negative of the same size, it may be worth while to examine into the philosophy of the question, and see what really takes place when, instead of placing the small negative in contact with the paper, it is placed at a distance from it, and the divergence of the rays of light is used to obtain a larger picture. With the photographic details of the process it is not now proposed to deal, but the optical side of the question will bear examination, and some points connected with it may be found interesting.

If a negative is perfectly sharp and distinct in every portion, and the definition of objects at various distances equally good, it is surprising to observe the extent to which it will bear enlargement. Of course, to say that it is *perfectly* sharp, would be to admit that it would bear an indefinite amount of magnification without any loss of definition, but using the word perfect in its ordinary acceptation as referring to a sharpness quite possible of ready attainment, the amount of enlargement which may be permitted is very great. On the contrary, a softness and lack of microscopic definition, which in no way detracts from the appearance of a print made from the original negative, and indeed in the opinion of many is more artistic and effective, unfits it almost entirely for any enlargement without producing a blurriness and indistinctness which is almost painful.

A negative to be used for enlarging should, if possible, be taken with that object in view, and by the use of every possible means rendered as sharp, clear, and well-defined as possible. A small stop in the lens, and a clearing reagent in the developer, together with ample time both in the field and in the dark room, are necessities.

It must not be forgotten that the picture, in any case, is simply a matter of the distribution of light, and that in enlarging an image already made by one impression of light, upon a sensitive surface, we are calling upon a second installment of light to

do the same work. This action is not greatly different from the use of a relay in telegraphing, where a feeble current passing along the main line simply throws a local battery in and out of circuit, and the greater portion of the work is done by the strength of the local battery, while the feeble impulses along the main line must merely indicate the action.

The difference which may be seen in the brilliancy of a lantern-slide when thrown upon the screen by a good or a poor light, may serve to indicate the influence which this secondary illumination has upon the enlarged image, and it is an important element in the theory of enlarging. If we take two negatives of the same subject, one quite small and the other large, and then make an enlargement from the small one to the same size as the large direct picture, they will be comparable in several ways with interesting results.

Unless the focal length of the lens with which the large negative is made is just as much greater than the small lens as the difference in the size of the pictures, the depth and definition in the shadows of the small negative will be much the better, and this advantage will be retained in the enlargement, and the reinforcement of the second installment of light during the enlargement will bring out depth and effect from the small negative which the large one cannot possess. Again, this effect is shown again and again by the impression which is made by a good lantern-slide upon the screen, an effect which is due not only to the actual size of the picture, but also, and very largely, to the proportional increase in the focal distance at which the picture is viewed.

This question of the relation between the focal length of the lens with which a picture is taken, and the focal distance at which it is *seen*, is a matter which has hardly received the attention which it deserves, and it is of especial importance in connection with this matter of enlargements. As a matter of fact, there is but *one* focal length which is correct for each picture, and that distance is the distance at which the finished picture is to be held from the eye. The object of a picture is to produce upon the eye the same effect as the original subject. When the photograph is taken, the rays of light from the object pass through the lens, and form the image upon the ground glass at a definite distance behind the lens.

If now we make a transparency from the negative, and stand in the same position as the camera, and hold the transparency before the eye, moving it to and fro, until it just coincides with the actual view beyond, it will be found that this coincidence just occurs when the distance of the transparency from the eye is equal to the focal length of the lens with which the picture has been taken. If the picture is held at any other distance, either greater or less, it may be pleasing, but it will not be correct. The normal distance of distinct vision is about twelve inches, and this is the best focal length for lenses to be used in making photographs for illustration, or to be held in the hand for examination.

For large pictures, to be examined from a distance, however, it would be most difficult to work with lenses of long enough focus to follow this law, and it is just here that the enlargement has the advantage, since the magnification of size is also equivalent to a corresponding multiplication of the focal length, and the correct point of view is removed to a corresponding distance, while the large direct picture, which has been taken from a focal distance proportionally not so great, fails to look so natural or so effective.

HENRY HARRISON SUPPLEE.

EMULSIONS.

Read before the Photographic Society of Philadelphia.

THE accompanying formulæ for the preparation of a gelatine emulsion for photographic purposes are the result of several years of constant study and experimentation on the part of the writer, and it is believed that if the details of the process are strictly carried out, with but an ordinary degree of ability, plates fully equal to the best brands in the market can be easily and uniformly prepared.

AMMONIA-NITRATE EMULSION.

No. 1.	Boiled water	1 oz.
	Iodide ammonium	5 grs.
No. 2.	Chloride ammonium	20 grs.
	Water	4 drachms.
	Acid, nitric, a drop or two to render the solution acid.	
No. 3.	Nitrate silver	60 grs.
	Water	4 drachms.

To the nitrate of silver dissolved in the water (No. 3) add, drop by drop, the solution of iodide ammonium (No. 1), until the precipitate of iodide of silver formed ceases to dissolve in the solution. Then pour in the solution of chloride of ammonium (No. 2), wash the chloride silver formed with three separate waters, draining each time; then add some pieces of broken glass to the moist mass, and then 16 grains of Nelson's No. 2 gelatine, and dissolve with gentle heat (temp. 90°–100°). Shake well, and add the following solution: Water, 4 drachms; bromide potassium, 43 grains; liquor ammonia, ½ drachm. Pour this solution at one time into the bottle containing the melted gelatine and chloride of silver. Cork the bottle to retain the ammonia. Keep at a temperature of 90° for fifteen to twenty minutes. Test the emulsion by a drop on glass, looking through by transmitted light from a match to see if all reddish color is gone. When this has disappeared, and the emulsion viewed by transmitted light is grayish blue or green in color, the heating has proceeded far enough; and then 120 grains of Heinrich's gelatine (previously softened in water and melted at a temperature higher than 90°) is added to the emulsion. This is to be well shaken, and then allowed to cool by gelatinizing it slowly upon the sides of the bottle. Let it stand six hours. Remelt at a temperature of 100°, gelatinizing again upon the bottle. Allow to stand six hours, and melt once more. It is now ready to be mixed with the boiled acid emulsion (see following formula). Or, if the ammonia nitrate formula is alone to be used, the melted emulsion as just made is to be poured into a dish and allowed to cool and set; when cold placed on a clean cloth (mesh 1–80 inch), squeezed through, the finely-divided mass well washed, drained, and pressed under weight to expel excess of water, remelted, filtered through white silk, and then coated on glass. The final amount should not be more than 3 oz. If more, then the gelatine has absorbed too much water in washing; to avoid this, press longer. In preparing this emulsion it has been found that the presence of the bromide, with heat and free ammonia, favors

the conversion of the chloride silver into the bromide. Another feature of the process is that the nitrate silver does not come into contact and is not mixed with the gelatine at all, until converted into the chloride. As nitrate silver acts quickly and very strongly on nitrogenized animal compounds like gelatine, there must always be more or less decomposition when the two are mixed together, if but for a short time. By the method just described this is entirely avoided, and the inert and insoluble chloride silver exerts but little action on the gelatine. The amount of iodide silver in the formula (formed by precipitation, etc.) is the proper quantity to be combined with the bromide, and is precipitated also when the chloride silver is thrown down.

The time at which the melted gelatine (Heinrich's) is added is also an important point. If the heating operation is carried on too long before this is added, the bromo-iodide of silver becomes very granular, and in the subsequent operation of coating the plate is apt to settle to the surface of the glass, leaving an upper layer of finer and more insensitive granules of the salt. It should therefore be heated only long enough to dissipate the red color when viewed by transmitted light. The subsequent operations of repeated melting and cooling after the thick gelatine has been added serve to give rapidity without producing a coarse granular deposit.

This formula is particularly suited for employment by amateurs, as its manipulations require but little apparatus and but ordinary care. The emulsion is one of considerable rapidity, equal to about 40 sensitometer as compared with the Cramer plate of same number, and gives excellent negatives. This formula, however, can be still further improved upon by mixing the emulsion with a boiled emulsion prepared as follows:

BOILED EMULSION.

No. 1.	Gelatine, Nelson's No. 1	15 grs.
	Water	2 ounces.
	Bromide ammonium	43 grs.
No. 2.	Nitrate silver	66 grs.
	Water	1 oz.
	Nitric acid, sufficient to render solution acid.	

Add No. 2 to No. 1, drop by drop, shaking frequently, both solutions having been previously warmed to 150°; then add 1 gr. iodide ammonium, bring temperature to boiling point and boil twenty or thirty minutes, until a drop of the emulsion tested by transmitted light has lost its red color. Allow the emulsion to cool to 100°, and then add 120 grains Heinrich's gelatine (previously softened in water and melted at a temperature of not over 100°) to the emulsion. Cool this slowly by allowing it to gelatinize on the sides of the bottle; allow to stand six hours, remelt, gelatinize again; remelt and gelatinize once more after it has stood the same length of time. The emulsion is now ready to be melted and mixed with the ammonia nitrate emulsion, and then cooled, washed, pressed, filtered, and coated as previously described. A much improved character is obtained by the mixing of these two emulsions, and should the operator possess sufficient skill, this method should be preferably followed.

A few additional notes on some of the details of these processes may prove useful.

Temperature.—In order to produce the most perfect results, all these manipulations should be conducted in a room lighted with non-actinic light, and kept at a uniform temperature of about 100°. This not only tends to keep the emulsions of a uniform character, but greatly facilitates the straining and mixing of

the acid and alkaline emulsions. When the plates are coated they can be immediately passed through a small opening into an adjoining room, kept at a uniform temperature of 50°, with free circulation of air, and dried either on racks or on nails on the wall, face outwards.

Glass.—This should be previously cleaned by soaking it in a mixture of equal parts of nitric acid and water, well washed, dried on racks, polished with cuttle-fish bone and water, using a piece of well-washed flannel. This should be washed with a weak solution of soda, so as to remove any traces of oil or grease. The plates, after being dried, should be edged with a thick solution of gum tragacanth, by means of a small camel's hair brush tied to a short thin stick, with the end of the stick projecting a short distance so as to act as a guide for the brush. The plates should then be stored in the hot room until wanted.

Filtering.—If this is done in the hot room it can be accomplished by passing the melted emulsion through absorbent cotton. Otherwise a hot-water jacket should be used for the filtering funnel, and the emulsion passed through well-washed white silk or cotton.

WILLIAM BELL.

THE PHOTOGRAPHIC SOCIETY OF PHILADELPHIA.

A STATED meeting of the Society was held Wednesday evening, March 5th, 1890, the President, Mr. Frederic Graff, in the chair.

The Secretary read a communication from Mr. W. E. Barrows, President of the Welsbach Gas Light Co., announcing that the company had fitted up a room at their factory in Gloucester, N. J., for photographing with incandescent gas light, and inviting the members to make use of the room, and to visit the factory and witness the manufacture of the light. On motion the invitation was accepted with thanks.

It was also announced that pictures from this Society for the New Castle exhibition might be sent unmounted. They would be mounted by the committee in charge of the exhibition at a trifling cost to exhibitors. It was requested that exhibits be forwarded as early as possible to allow ample time for mounting, etc., after arriving at destination.

Mr. Stirling, chairman of the Lantern Slide Committee reported satisfactory progress in the preparation for the exhibition to be held March 12th, and the prospects of a fine display of representative work of the members.

At the last conversational meeting slides had been shown from the Chicago and Newark clubs, each sending fifty slides. Slides were also shown by Messrs. Dillon, Mitchell, Wood, Hanawalt, J. H. Bradway, Sullivan, Marcellus and Fulmer.

Mr. Sterling also announced that forty-three English slides representing the Society's share of the 100 sent to this country by the Camera Club of London on account of the last English Interchange, had been received. They had been selected by lot impartially, and after the meeting would be distributed in like manner to the ten members whose slides had been selected to send abroad. The members entitled to receive slides with the number due each were as follows: C. R. Pancoast, 6; George Vaux, Jr., 4; Ellerslie Wallace, 4; John Bartlett, 2; E. W. Keen, 1; J. H.

Burroughs, 1; R. T. Hazzard, 2; W. D. H. Wilson, 2; W. H. Rau, 8; J. G. Bullock, 5; John Carbutt, 2; Robert S. Redfield, 6,

Mr. Stirling stated that hereafter the Interchange slides to be sent abroad would be simply loaned, the idea of permanent exchange having been abandoned, so that eventually each member would get back all slides loaned to the Interchange.

The Committee on Membership reported the election of Mr. Henry Troth as an active member.

Mr. Bell presented a paper on "Gelatine Emulsions." In introducing the subject, he said he thought that it was the late president of the Society, Mr. Bates, who was first in this country to bring into use the gelatine plate. In his frequent trips to Europe, Mr. Bates had had Mr. Kennett prepare some of them and they were brought over. It was a long time before Mr. Bell had heard of anybody using them here. The next one he heard of making emulsions was Mr. Geo. W. Hewitt. He, himself, had also been more or less engaged in searching for gelatine emulsions. The next one that was successful was Mr. Carbutt. Not having himself been successful he did not claim anything. Mr. Hewitt's plates were very good.

Mr. Bell then proceeded to read his paper, which, he said, was the result of a good many years' experience.

At the conclusion of the reading, Mr. Bell said that if any of the members were "chemically inclined" he would ask them to take the No. 1 formula and test it to see if it was what he claimed for it.

Referring to the sensitiveness of plates, Mr. Carbutt asked "What does 40 or 80 mean?"

Mr. Coates—I think it means the gullibility of the buyer. I have bought "40" plates and found "20" much better.

Mr. Browne—Mr. Bell, in the early part of his paper, alluded to Mr. Geo. W. Hewitt's experiments. So far as I know, Mr. Hewitt was one of the earliest experimenters with gelatine plates, and certainly Mr. Hewitt's process and the results that he succeeded in obtaining were very remarkable. There was one peculiarity about his plates that I have never seen in any purchased plates, and that was that the appearance of the image was more beautiful than I have ever seen in a commercial plate. The appearance of the image was slow and remarkably beautiful. I think Mr. Carbutt saw some of them. I do not know that Mr. Hewitt claims anything original in that process, but there was one difficulty in his plates which was a very serious one and which he was never able to overcome, that was the liability to frill. I used many of his plates, but there was that uncertain character in the matter of frilling which made it to me very disagreeable. I think that in the future Mr. Hewitt will always receive credit as being one of the very earliest experimenters in gelatine dry plates.

Mr. Bell—Mr. Hewitt developed the gelatine plate precisely as a collodion dry plate, bringing out the details and finishing with ammonia sulphate of iron and silver.

Mr. Suplee—Do you think there is any advantage in that?

Mr. Bell—Oh, none at all; you can get all the density you want without it.

Under the head of "verbal communications," Mr. Carbutt referred to the subject under discussion at the previous meeting—that of deposits on the cover glass of slides—saying that he had received a number of slides from Mr. Pancoast, accom-

panied by a lettter in which he said, "Referring again to the incrustation on lantern slides, I was looking over some old slides I made in 1883 (possibly 1882), on some of your A plates, and find them in A 1 order, no discoloring, mould, or incrustation whatever. They were not varnished or protected in any way, and were subject to the same conditions as the one I showed you at the society." In another letter of a later date to Mr. Carbutt, Mr. Pancoast wrote on the same subject: "I send you by this mail one of the lot I spoke of in a previous letter in order that you may see how perfectly it has kept. It was in the same box as the other slides and subjected to the same conditions as those which show such a marked incrustation. I think the glass is B. P. C., at least the plates were your regular A plates. These slides were made by contact printing, and developed with oxalate."

Mr. Carbutt showed a "blue-print lantern-slide" sent him by Mr. Barbour, of Chambersburg, who had published the method in one of the journals.

Mr. Bell called attention to a portion of the report of a previous meeting in which the words occurred, referring to the use of turmeric for color screens for orthochromatic plates, "Mr. Bell thought turmeric was adapted to the work with orthochromatic plates, and was as good as anything." He desired to say that he distinctly stated that turmeric could not be relied upon unless freshly prepared.

Referring to orthochromatic photography he showed a screen of brilliant yellow, prepared by Mr. Ives, and loaned by him. It was put behind the lens, holding back blue rays and allowing the yellow to act more strongly on the plate. It was necessary to have a plate specially prepared, as the ordinary plates would not answer. It should be an orthochromatic plate. He showed two glasses in illustration of his remarks, saying that turmeric would not answer.

Continuing, Mr. Bell showed the same color screens he had obtained in London last year. One was of pot metal, ground and polished like plate glass, and which he said would never fade. He had three tints, but finding one was too light he had cemented two together with balsam of fir.

Mr. Redfield showed a screen similar to that of Mr. Bell's, made by Mr. Ives. He also showed the front board of his camera, and the slide in which the screen was placed. It was a double glass prepared by Mr. Ives. Another method was a circular piece of glass prepared by Mr. Carbutt, which was dropped in the front of the lens, and a strip of blackened leather slipped in front of it, acting as a spring, and keeping the glass in position. Probably an improvement would be the introduction of some springs bracing the plate squarely against the back of the lens so as to prevent its being at an angle, and thus producing distortion. A still better way would be to coat the surface of the lens with some coloring matter, or have the lens made of some colored glass, as suggested recently in one of the English journals.

Mr. Cheyney said he had found it utterly impossible to get a sharp image, focusing first and putting the screen in afterwards. If focussing was done without the screen, and then the screen put in, the focus would be altered and thrown back as far behind as the thickness of the screen.

Going to the blackboard, Mr. Cheyney illustrated his remarks by diagram.

Mr. Supplee asked what would take place if placed in front of the lens.

Mr. Cheyney said the change would be very slight.

Mr. Carbutt suggested the preparation of thin films of colored collodion attached to diaphragms of black cardboard, and used in place of the usual diaphragms.

Mr. Redfield thought two pieces of thin black rubber could be used.

Mr. Carbutt said he had suggested cardboard because it could be obtained so easily.

Mr. Bell said he had already gone over that process, and found the collodion film was too brittle and curled all up.

Mr. Carbutt said it was not properly prepared then. It had a natural tendency to curl, but not to such an extent as to preclude its use. If 5 per cent. of castor oil were put in it would remain firm.

Continuing the subject of orthochromatic photography Mr. Carbutt showed some prints illustrating the excellent keeping of the plates, and also a photogravure print made by a publishing house in Boston from a negative on one of his orthochromatic plates. The print was from an old painting, and had a remarkable brilliant quality with correct color tone.

Mr. Tatham asked if any one used Vogel's eoside of silver plates. He had tried them, and found them very slow, about as slow as a Carbutt A.

Mr. Stirling reported from the Executive Committee that the catalogue of the library had been completed, and copies could be obtained. The work had been a very laborious one, and the credit for the very careful catalogue was due to Dr. Ellerslie Wallace. The library belonging to the Society was exceedingly valuable, and there was probably no collection of photographic books in America that was as complete as that of the Society. Mr. Stirling placed a copy of the catalogue on the President's desk.

Adjourned.

ROBERT S. REDFIELD, *Secretary.*

EXPERIENCES.

IN giving my experiences, I will give those pertaining to the selection and use of apparatus, outfit, and the fitting up of workrooms for the various processes used by amateurs and professionals. I have yet to see my ideal camera; while not having used all of the many makes, I have handled most of them, and had for my personal use many kinds, and find none perfect. To a professional who is called on to make all kinds of work, and cannot choose his subject, I think the average camera lacks many things. The backs do not have sufficient swing, some of them moving less than half an inch, when two to three inches are sometimes required. Again, the fronts do not have enough slide—do not move high enough. Those that carry a cone bellows (made very small to be light) with them, while having movement enough, allow the bellows to cut off as much as one and one-half inches on the top of the plate. Compact cameras with cone bellows made with the front to drop down

as a platform bed, when used with a very short focus wide-angle lens, cut off as much as one to two inches of the foreground. This, of course, is obviated when the back can be moved forward, as on the Hare boxes, and in this way avoid cutting off foreground. One camera I used was compact and quite light, but I could not slide up the front and swing the back at the same time, thus losing many important subjects, such as spires of churches, high towers, ten-story buildings, etc. Either the bellows must be made square to the front board with narrow plates, or if a cone bellows, not be very small at the front, to avoid covering the plate when the lens is raised. I have used two cameras, one 11x14, and one 18x22, made exactly for such work, with complete success. They were not of the very light pattern, but well and substantially built, with a swing back (vertical) that will move two and one-half inches from the center, and a front that will slide up nearly four inches on the 11x14, and six inches on the 18x22, and can, with these cameras, bring the lens opposite the top of the plate in extreme cases, without losing any of my subject. They have back focus, and in the 18x22 I can slip off, by bayonet joint, twelve inches of the bed, thus allowing room to get into crowded quarters, and also see to focus with a wide-angle lens. Experience has taught me that it pays to carry a little more weight and get stability. The above cameras are Scoville make, and supplied with daisy holders. The English cameras that have the best reputation are not light, but compact and heavy. In many cases the bellows is square (not cone) to the front, and made in small pleats, but the main objection is, there are too many screws and bolts to adjust before it can be set up ready for action. For small sizes, such as 6x8, and 8x10, I prefer featherweight holders, but do not think any compare with the daisy holders for large sizes. A solid tripod cannot be made very light, and to him who wants a sure foundation, by all means get one with single pivots, without joints, or at least with only one joint, for small sizes, and, for large cameras, a board for the top, with the joint pieces riveted fast, as screws will give way.

In going abroad on long journeys, never go with less than three lenses for each size camera,—the more the better, as you will be enabled to do any reasonable thing, when you need to. One rectilinear and two wide-angle. Don't buy a lens because it is cheap, as a good lens cannot be made cheap. The same applies to a shutter. Get the best, and take care of it, and it will last as long as you want it to. In going on long sea voyages, avoid those shutters that have exposed parts of steel on them, that will rust and become useless by easily breaking; at the same time keep an extra bulb and rubber hose to replace one that has become hard and worn by use.

In fitting up workrooms and photographic studios, I have noticed that in most cases all the best work is put on the reception, show-room, and office, and perhaps the sky-light room, and all other rooms fitted up cheaply,—poor plumbing and cheap carpentering work. This is a great mistake, as an operater must have the conveniences to do good work, and do it quickly. The same applies to the printing and mounting rooms.

WM. H. RAU.

AMATEUR EXPERIENCES.

IT may be all right for the editor of a photographic magazine to sit in his sanctum, lean back in his easy chair, and advise the amateur photographer to take his camera and photograph the various old buildings, churches, and historic landmarks in his immediate vicinity. This is advice easily given, but let the aforesaid advisor turn himself into a camera carrier for a week, and when he returns to his luxurious sanctum,—if our experience is worth anything,—he will be a sadder but much wiser man. A few examples of our personal experience will suffice to prove our assertion.

The locality in which we reside, the south-eastern part of Pennsylvania, besides its bits of exquisite scenery, abounds in revolutionary and colonial landmarks; and from the accessibility of many of these historical subjects, the field is more or less overrun with camera carriers and Kodak snapshots, male and female. Many of these visitors, by the total disregard of personal and private rights, have biased the resident community against the whole guild of amateur photographers, and as a result access to some of the most historic buildings in the district is now peremptorily refused to all applicants. In consequence of these short-comings of a few ill-bred persons, the respectable, conscientious photographic student often has a hard road to travel, being made to answer for the sins of his rude predecessors, who disgraced the photographic guild which they professed to represent. Independent of such cases, of which we will have more to say at some future time, the rebuffs met with, even under ordinary circumstances, where some ignorant rustic objects and will not listen to reason, are often disheartening in the extreme, entailing not alone a loss of time and money, but of temper as well.

On one occasion the writer projected a trip up the old Swedeford road in the Chester Valley, for the purpose of making a series of negatives of an old building, which in years gone by had been a roadside inn and "lodge stand,"—*i.e.*, a place where a Masonic Lodge had met in revolutionary time. The day was hot, the drive long and dusty, and more than all the reputation of the occupant crusty. It was the intention to make negatives of the exterior and interior, especially of the old bar-room and the large room on the second floor, wherein the old lodge had once met, and which has not been altered during the present century. As an extra precaution to assure success, the aid of a neighboring clergyman well-known to the resident was enlisted. Arriving at the house, the man, who proved to be a raw-boned Scotch-Irishman with a backbone, refused to listen to our appeal, nor would he even permit us to see the lower room, much less the old "Masonic room" on the upper floor. Our friend the clergyman used his best endeavors in our behalf,—we explained to him that we were a member of the Leopardville Camera Club,—that we would make pictures of his house and send him some without charge, all without effect; at last, after all patience was exhausted, we ventured the question, whether he would object to a picture being taken of the exterior, if we set the tripod up in the middle of the road. His reply was, "If ye'es dare to set up yer thing out there ferninst the house and pints it over here, I'll hiss the dag on ye'es, and if the dag doesent tare the hide aff of ye'es, I'll kill the dog," at the same time calling to his boy "to tie the dag

loose." As the canine was of an exceedingly lively and willing disposition, of the cross-breed bull variety, we quickly gathered up our tripod, camera and clergyman, jumped in our buggy, and drove sadly on. A day lost,—a desire unaccomplished.

On another occasion, an old Quaker meeting-house was the objective point; this too necessitated an eight mile drive. On our arrival we found the meeting-house closed. After looking up the sexton, his wife offered to open the door, and admit us into the old sanctuary, provided we gave her half a dollar in advance. This was agreed to; her palm was crossed with the silver, success seemed assured, the light was good, not a leaf stirring. The woman, as soon as the money was given her, returned to the house, as she stated, for the keys. We waited several minutes for her return; we commenced to get anxious. However, at last she reappeared with the keys in one hand, while on her other arm she carried a strapping big ten-months-old baby. "Johnny" his name was, as we found out, and thereby hangs the tale. It was but a short distance to the meeting-house, the door was opened, the window-shutters hooked back, the camera duly set up and leveled, the focus taken, and all was ready. But there stood the woman with Johnny in her arms. We asked her to step aside as we were ready; to our surprise, nothing would induce her to move. "If the meetin' was agoin' to be took, she and Johnny was agoin' to be took with it, or it would'nt be took at all." We tried to argue with her if she would step aside; we offered to make a nice picture of "she and Johnny" by themselves, but all the satisfaction we got from her was that "she had been there before," and had been "fooled too often by you fotegafers." Talk, argument, reasoning, all were in vain. "She didn't care how long she stood there, Johnny had had his dinner," and it was "she and Johnny" or nothing. Thus almost an hour was spent; "she and Johnny" were determined. As the negative was wanted for a lantern slide, it would have been worse than useless with "she and Johnny." So all that was to be done was to limber up, jump into the wagon, and retreat. Time, horse hire, a half a dollar, and a picture out.

Still this was not our worst experience. On a hot summer day in August last, we were trudging along an old neglected highway in the western part of our (Chester) county, with a heavily loaded camera case in one hand and a solid tripod under the other arm,—hot, parched, and dusty,—our purpose being to photograph the different houses along the old thoroughfare, which in former days had been as full of life and activity, as it was now a picture of desolation and gloom. One of these old houses by the wayside had once been a prominent landmark and a famous hostelrie, and had quite a colonial and revolutionary history. We were more anxious to get this subject than any other within the five miles which we traversed on this hot and dusty journey. As we arrived at the house we found it necessary to set the tripod up within the enclosure, as the trees in front cut off a good view of the house. So opening the gate, we started for the back of the house, knowing that the occupants, as in most country houses, were sure to be in the kitchen. Well, we had not traversed half the distance before a tall, angular woman emerged, and opened the ball with "Mister, what do you want?" We told her in our blandest manner that we would like permission to make a picture of the house from the yard, as the house enclosure is usually called in our county. Suiting our actions to our word, we commenced setting up our camera, but had not finished when she interrupted, breaking out in a high falsetto key, "Well, just as I thought, and what I told Daniel, as you

would have cheek to come back here again, but I got you now," and before we could get over our surprise, the virago had seized the luckless photographer by the arm, knocking over the camera regardless of damage, yelling out, " Daniel, Daniel, come quickly ; I got him, the cheat, the villain." Well Daniel came, a tall, muscular, raw-boned six-footer, with clinched fists and business in his eye. We tried to get loose. We were at a loss to know what it all meant,—we asked them to explain,—we protested that there was a mistake somewhere ; in fact, it commenced to dawn upon us that we must have struck some private mad-house. However, at last, Daniel told us to "get," and as soon as Mrs. Daniel released her hold, and we could pick up our demoralized outfit, we got. The place had no further charm for us. Even after we were on the road we lingered not in front of the house ; we went on until we came to the next house, where we entered, with much hesitation, to crave a drink of water. Fortunately the resident here, a country physician, a gentleman of the old school, greeted us so cordially that we had confidence in human nature, and related our experience to him, and asked him for a solution of the mystery. After a hearty laugh, the doctor told us that some months ago a couple of sharpers had gone through that section, making believe to photograph the various houses, barns, horses, cattle, dogs, etc., in every case exacting payment in advance, promising to send finished pictures, which it is useless to say was never kept. His neighbors were among the victims, and so when we came along on our legitimate errand Mrs. Daniel and Daniel took us for one of the same kind.

As a picture of the house in question was of much importance to us, the kind-hearted physician offered to return with us to the place of our discomfiture. He explained to the worthy couple that we were a member of the Leopardville Camera Club, and took the pictures for amusement and not profit, or as a means to swindle innocent persons. However, Daniel and his wife were obdurate. She argued that we had just the same kind of a box on three legs, and stuck our head under a black apron just like the sharpers, and if we were not of the some crowd, why our machine was. Nothing would convince the simple-minded couple ; so we had to content ourselves with a snapshot from the roadside.

Now, Mr. Editor, these are but a few of the experiences of an amateur photographer with historic proclivities. In my time I have been chased by a bull, numberless dogs, and irate agriculturists, have had rebuffs innumerable, beside being on different occasions taken for a bunco man, spectacle peddler, sharper, crank, loon, and goodness only knows what not. As I said before, take your silver-plate rosewood camera and battery of gold-mounted lenses, go out and try it. After that you will be able to speak from experience. Trudging over dusty country roads on a hot summer day, lugging your outfit, is not quite as pleasant (no matter how enthusiastic you may be) as sitting on a cool rattan rocker in your sanctum, sipping an iced cobbler, and writing editorials, in which you advise amateurs what to do, where to go, and what to take.

J. FOCUS SNAPPSCHOTTE.

TONING AND FIXING.

THE following interesting communication appeared in the current number of the Beacon. It is from the pen of Mr. Joseph Wormald, and although the process is an old one, and with slight variations well known to many amateur photographers, it is yet well worthy of the attention and perusal of all readers of the AMERICAN JOURNAL OF PHOTOGRAPHY. The writer has seen some excellent results obtained by a similar process. As to the permanency, however, of the prints we would not like to venture an opinion, as a sufficient length of time has not elapsed to allow a correct judgment. But even granting that these results should not be quite so permanent as the ordinary albumen prints, fixed and toned separately, the process is so simplified that any amateur, whether lady or gentleman, can print their own pictures and obtain such pleasing results, without the experience and judgment made necessary by the process in common use, which often requires years of practice.

In the subjoined article there seems to be one omission,—viz , the length of time required for the final washing. From the experiments which came under the personal notice of the writer, we would suggest that the prints be left under the tap not less than three hours after they are taken out of the toning and fixing solution. As a matter of course the fixing must be done in a diffused light.

The article in question states: "Printing, or rather toning, to my own satisfaction used to be such a difficult, or rather impossible, operation that for two or three years I sent my negatives, or at least the few that were worth it, to a professional printer. Of course, when my friends admired my pictures, especially the fine tones, I felt mean if I did not say where they were printed, and, if I did, was disgusted with the 'Oh, that accounts for it' expression immediately assumed. But all this is now ended, and I can show with confidence as brilliant prints and beautiful tones obtained with ease and certainty, and in such quantities, from one to any number, as may be required, as ever I got from the professional printer.

"As I believe many of the readers of the Beacon suffer as I did, I wish to tell them how I got out of my difficulty, in the hope that they may attain to a like success. No doubt some one will say, "You began to make better negatives," and no doubt that is to a certain extent true, as there is nothing that will so help one on the road to good negative making as being his own printer; but that in reality is only a small element in the cause of the improvement. Six or eight months ago I saw a formula for what was said to be an old fixing and toning bath capable of giving fine tones, and that had been abandoned under a mistaken belief that the prints produced by it were not permanent. It looked so promising, and I had such confidence in your opinion, and was so anxious to do my own printing, that I decided to give it a fair trial, and, by following the directions implicitly, succeeded to my entire satisfaction. Since then I have somewhat varied the proportions, and now proceed exactly as follows:

TONING AND FIXING BATH.

Solution of chloride of gold (one grain to the dram),	½ ounce.
Nitrate of silver,	30 grains.
Hyposulphite of soda,	4 ounces.
Water,	20 ounces.

"Dissolve the hyposulphite in ten ounces of the water, the gold in five, and the silver in the remaining five ounces. Then pour the solution of gold gradually, with constant stirring, into the hyposulphite, and afterwards add the silver in the same way. This order of mixing must be strictly adhered to, and the bath so made allowed to stand for two or three days before using. It will keep indefinitely, and may be used over and over until the gold is exhausted. Practically, I don't think I continue to employ it so long, but keep tally on the quantity of paper toned, and when five sheets have passed through the above quantity it is thrown away and a fresh bath made up. When the bath has been made for some time, and especially after a number of prints have been toned in it, there is generally a considerable quantity of black deposit found at the bottom of the bottle. This seems to be sulphur, but does no harm, as enough of the clear liquid can be decanted into a tray to cover any number that I wish to tone.

"The methed of operation is very simple. The prints, decidedly darker than they are expected to be when finished, are placed at once into the toning bath without washing, and kept moving till the desired color is acquired. First the purple silver chloride seems to be dissolved, and the prints assume a brick-dusty appearance, which gradually becomes less and less red, then more and more brown, then a purple brown, and finally a deep purple brown, which is just what I want. There need be no doubt or hesitation as to how far to carry the process, as the prints only requiring to be washed on removal from the bath, no subsequent change takes place, unless, perhaps, that the purple becomes very slightly deeper on drying.

"I am very well pleased with my results, and heartily recommend the method to my brethren of the camera."

A NOTE FROM "METRE."

PHILADELPHIA, Feb. 27, 1890.

MR. EDITOR:—Dr. Wallace, in his article on "Weights and Measures," *vide* February number of your journal, has fallen into a singular error, one hardly to be expected from him, in regard to the terms used in the metrical system. He says: "The division or multiplication by 10 is perhaps easier, save for the troublesome Greek prefixes, which have to be remembered in connection with quantities greater or less than the standard." A moment's reflection would have shown him that the terms for multiplying are *Greek*, and those for dividing *Latin*, this distinction very materially aiding the memory. Thus the word

Deca	prefixed	means,	10 times.
Hecto	"	"	100 "
Kilo	"	"	1000 "
Myria	"	"	10,000 "

On the contrary, for divisors, the word

Deci	expresses,		10th part.
Centi	"		100th "
Milli	"		1000th "

Thus

One Deca-gramme means, ... 10 grammes.
One Deci-gramme " . . . . . a 10th part of a gramme.

The metrical system as conceived by its authors is so perfect in all its details that it must ultimately come into general use among all civilized nations. Even English conservatism must sooner or later give way to the inevitable. In the hurry of writing we can well imagine that Dr. Wallace omitted the word "Latin."

METRE.

This word can now be inserted before or after the word "Greek" in the article. We invite correspondence on this subject. "ED."

WE welcome into the brotherhood another Photographic Society, the Frankford Camera Club, which has started out with a goodly membership of ladies and gentlemen. We particularly commend the admittance of ladies, and hope the example in this respect will be followed by some of our older societies. The officers for the year are Mr. Geo. M. Taylor, President; John Justice, Secretary and Treasurer.

MEET OF THE CAMERA CLUB.

Between seventy-five and eighty people attended the meeting of the Frankford Camera Club, at Wright's Institute, on Tuesday evening, and listened to instructive and interesting discourses. Mr. Charles Kain, assistant superintendent of the Public Schools, gave an interesting talk on the adaptability of the camera as an aid in teaching. His remarks were practically illustrated by works which he had made, and which are now in use in the public schools. Dr. Ekwurzel and Mr. John Justice also gave an interesting talk on blue prints and how to make them, giving formulæ for the working of same. During the evening it was suggested by one of the members that all the places of interest around our own town and immediate neighborhood be photographed by the club's members and kept in albums, the property of the members, so that at some future time they may be looked upon not only as curiosities but with interest.

The residents of Frankford should think this work worthy of consideration and support, and should send in their names to the secretary, Mr. John Justice, Orthodox Street, with a view to become members. Five ladies' names were handed in on Tuesday, and we trust more will come forward by April 1st, on which day the annual meeting is held. The announcement of the April meeting and lecture will be published in a further issue of this paper.

OUR ever welcome exchange, the *Photographisches Wochenblatt*, so ably edited by Dr. A. Miethe of Berlin, it seems has received several communications or inquiries in regard to our article in the January JOURNAL, in reference to a new danger which threatened the American dry plate industry, and in which the *Wochenblatt* is quoted. Dr. Miethe thus disposes of the subject in his reply to an "Anxious

Inquirer:" "Herrn P 117.—We have the article also now read, and ourselves much amused; you wonder yourself even so as we, that the smart Yankee our notice and warning against the 'Crotonwanze' for real earnest have taken. The dressing up of the jest is, however, very pretty. Our notice originated, however, as a matter of fact, in one American periodical, where it on an important place to find is."

We thank our brother photoscribe for his kind words and appreciation of the joke, and trust that our effort has not given offence to any one in the far off Fatherland.

"A little joke now and then, is relished by the best of men," even if it is at the expense of the despised cimex lectularius.

In the same article Dr. Miethe goes on to state, joking aside, that it is unfortunately an established fact, that certain organisms exist which have a peculiar predilection for the gelatine dry plate—especially when in a damp or moist atmosphere. An interesting instance is thus quoted from his personal experience, during the past summer:

"On some of his own specially prepared, and otherwise perfect, dry plates peculiar transparent spots appeared suddenly; an inspection under the microscope showed a branching algæic organism which seemed to radiate from the center of the spots. The dry chest in which the plates were kept was at once subjected to the fumes of bi-chloride of mercury and carbolic acid; after a thorough fumigation all the spots disappeared from the plates, without leaving a trace."

It would be of great interest to know the result of an exposure and development of these plates, on which the spots had first appeared and then vanished after being subjected to the disinfecting fumes. Will Dr. Miethe kindly supply this information in the *Wochenblatt*, or otherwise? J. F. S.

A chance for Amateur Photographers.

TO encourage the art of photography, and especially to encourage amateurs in the art, FRANK LESLIE'S ILLUSTRATED WEEKLY hereby offers a prize of a $200 photographic camera of the finest make to the amateur photographer who shall, within the next three months, send us the most perfect and artistic specimen of his or her work. It is our purpose to devote a page of this periodical weekly to the reproduction of the choicest pictures that are sent in for this competition, and at the close of the competitive period we shall produce photographs of the chief contestants. It is our desire therefore, that contestants forward to us, with their work, cabinet pictures of themselves. In sending entries for this contest, the date when the pictures were taken, descriptions of the subjects, and any other facts of interest regarding them, should be given. We would also like the age of the photographer and the experience he or she has had in the art. The prize-winner will be selected by a committee consisting of Mr. Pach, the eminent photographer of this city, and Mr. Joseph Becker, the head of the art department of FRANK LESLIE'S ILLUSTRATED NEWSPAPER. The first prize offered will, if the competition is sufficiently animated, be followed by others. The contest will be limited exclusively to amateurs. Professionals are barred.

Address all communications to

ARKELL & HARRISON,
"Photograph Contest,"
JUDGE Building, New York.

LITERARY AND BUSINESS NOTES.

So great a power has the camera carrier become in the land, that even the hotels in picturesque parts of Europe recognize the fact, and are now using the dark room and accessories as a medium to attract patronage. Below we give a list of hotels in Switzerland which advertize that they are supplied with an "Installation Photographique, a la disposition des amateurs":

Hotel Beau-Rivage, Director M. J. Maurer, *Interlaken*, cant. de Berne. Hotel d'Angleterre, Director M. C. Demmer, *Davos-Platz*, cant. des Grisons. Grand Hotel des Bains, Director M. C. Hiele, *Bex*, cant. de Vaud. Hotel du Chamossaire, Director M. H. Amiguet, *Chésières, s'Ollon*, cant. de Vaud. Hotel des Alpes et Grand Hotel, Director M. Ami Chessex, *Territet*, cant. de Vaud. Grand Hotel de Vevey, Director M. E. Michel, *Vevey*, cant. de Vaud. Grand Hotel du Lac, Director J. Tappert, *Vevey*, cant de Vaud. Pension du Panorama, Director M. N. Blotnitzki, *Vevey*, cant. de Vaud. Hotel du Grand-Muveran, Director M. A. Petter Genillard, *Villars s'Ollon*, cant. de Vaud. Hotel du Château de Laufen, Director M. C. Wolter-Witzig, cant. de Zurich. Hotel Freienhof, Director M. G.-R. Engemann, *Thoune*, cant. de Berne.

THE *Photographic Review* (Feb. 8) re-publishes our paper on "A New Danger to American Industry," with an editorial comment, in which it states that one of their staff, who is something of an entomologist, suggests that the pest may be the "Posse Amerikanesche."

THE *Revue Suisse de Photographic* for the current month contains a valuable contribution from the pen of Dr. A. von Wurstenberger of Zurich, on the uses of "Photography in Railroad and Road Construction." In his paper he gives the valuable results achieved with the aid of the camera in locating the "Säntis bahn" from Alpenzell to Wagenlucke, at an elevation of from 789 m. to 1904 m. respectively above the ocean line. A lack of space alone prevents us from giving the paper in full to the readers of the AMERICAN JOURNAL.

THE illustrations of the February *Revue*,—four process cuts, printed in the text,—hardly do justice to the negatives, which are by M. F. Zoissonnes of Geneva, who certainly deserves great credit for his selection of subjects and the execution.

WE would call the attention of our readers to the advertisement of the publishers of "*Frank Leslie's Illustrated Weekly*," which appears in the present number of the JOURNAL, with the request to give the matter their consideration. It is a competitive contest, which is limited exclusively to amateurs, the prize being a $200 camera and outfit. The enterprise marks a new departure in journalism, and we trust may prove a stimulant to better work and artistic effects. In the interests of photography we wish the promoters success, with the expressed wish that the prize may come to Philadelphia.—EDS.

THE *Art Journal* (Virtue & Co., London) acknowledges the importance of photography, and makes it a special feature in the volume for the current year. In the "Programme for 1889" it states that the value of photography for the purpose of art and illustrations will be dwelt on in more than one fully illustrated article, under the titles of Winter Studies, Photography under Difficulties, The High Alps, Mountain Studies, Plant Studies, etc. For these photographs have been lent by the principal photographers of the day. The articles will be by Capt. Abney, F. R. S., and H. P. Robinson.

The first of the series by H. P. Robinson, "Winter Photography for the Artist," is illustrated by fine reproductions, selections from the late exhibition of the Photographic Society. The "Study of Hoar Frost in the Grindlewald," by Captain Abney; The "Sandringham," by Mr. Bedford Lemere; and "A Frost Study," by Mr. Hopps, are all excellent. The beautiful little picture, "Homewards," by Mr. J. Gale, proves that, in capable hands, photographs showing much poetic feeling, and at no expense of definition, may be made in the low light of a winter afternoon. The remaining subject, "A Quiet Stream," by Mr. Ernest Spencir, is a winter scene, showing a placid rivulet, spanned by an old picturesque bridge, fully in keeping with the superscription.

LE AMATEUR PHOTOGRAPHIE (Paris) announces a prize competition for negatives of all kinds, the cut sizes of the plates being 9x12, and 18x24. It also contains the programme of a series of lessons on "Photography and its Application to Various Industries," to be given by M. Ch. Gravier, which will include lessons on the various reproducing processes, enlargement, reduction, and coloring, and upon which notes will be given in the paper.

We have noticed a peculiarity about the above publication; the current numbers invariably state that an illustration accompanies that issue, while in the copy received by us we have been unable to find it—in fact it is always missing. We have been at a loss to know whether the omission is accidental, the result of carelessness, or perhaps done as a matter of economy.

DR. VOGEL, in an article in the *Bulletin de l'Association Belge de Photographie* on the jubilee of photography, points out the influence which photography has had upon the art critic. He contends, and with perfect justice, that photography has given to the public a more profound knowledge of nature, which enables it not only to appreciate, but to judge of the work of painters much more accurately than was possible years ago. Painters, on the other hand, have been compelled to work according to the light which photography has thrown upon the conventionalities of art now shown to be errors. As for the power of reproduction, photography has worked quite a revolution, and added materially to the earnings of the artist. Dr. Vogel gives an example of a painter who sold his picture for 1,500 marks, the reproduction of which brought in at least ten times as much.

BE WEATHER WISE.

Says a weather observer: "When you wish to know what the weather is going to be, go out and select the smallest cloud you can see. Keep your eye on it, and if it decreases and disappears, it shows a state of air that is sure to be followed by fine weather; but if it increases, be prepared to protect your dry plates and apparatus, for failing weather is not far off." The reason of this is: When the air is becoming charged with electricity, you will see every cloud attracting all lesser ones towards it until it gathers into a shower; and, on the contrary, when the fluid is passing off, or diffusing itself, then a large cloud will be seen breaking into pieces and dissolving.

DURING the last month, much attention has been attracted to the theatrical advertisement displayed in the various show windows, which in itself is a triumph of modern photography. "Faust Up to Date," as the tableau is called, was photographed by Rothengatter & Dillon, with the aid of "McCollin's Blitz-Pulver," the lens Euroscope, F. 24, seed plate. The difficulty of the work will be better understood when it is known that the stage is forty-five feet wide and thirty deep, and contained over sixty people. We congratulate the artists on their success.

UNDER present circumstances it would be as well for tourists contemplating a summer trip through Russia and Siberia to leave their Kodaks and cameras at home If the report is true, an imperial ukase has been issued against any one taking exposed plates or films out of the empire. This action is said to have been caused by illustrated magazine articles derogatory to Russian institutions, which have been published in this and other countries.

MARCH BARGAIN LIST.

Colored Lantern Slides, mostly foreign, $1.00 each.

80—Lantern Slides of California, Yosemite Valley, big trees, etc., 20 cents each.

Accessories:

1—7x10 Glass Bath $1 00
1—Universal Finder 1 25
1—Wood Drop Shutter 1 25
1—Calcium Light Scioptican . . 25 00
1—15-in. Oscillating Burnisher, . 10 00
1— 6-in. Eureka Burnisher, . . 8 00
1—Bromide Easel, with Kits up to 25x30 . . . . . 10 00
1—Walmsley Reversible Finder 2 50
1—Packard Rock 3 00
1—8x11 Exterior Background, light right 8 00
1—Card size Burnisher 3 00
1—Cameo Press 1 00
1—Rustic Wood Chair 4 00
1 copy Photo Mosaics for 1881, in cloth 50
1 copy Photo Colorists' Guide, . 75
1 copy About Photography and Photographers 50
British Journal Almanacs for 1889, reduced to 30
1—Fuming Box 4 00
1—15x18 Japan Tray 50
1—Seavey Swiss Cottage Accessory 12 00
1—8x10 Exterior Ground, good condition, ... 10 00
British Journal Almanacs for 1878, 20
Photo Mosaics for 1883, ... 20
1—8x10 Osborne's interior background, new, light left . . . 20 00
1—4x8 Osborne's side slip . . 7 50
Pearl leads, the best retouching point in the market, each . 15
5x8 Woodbury Dry Plates, PER DOZ. 80
5x8 Neidhardt " . . . 65
4x5 Bridle " . . . 35
1—Hough's Oak Stump 7 50
1—Osborne's Bridge Accessory . 8 00
1—Osborne's Gate Combination Accessory, new 18 00
1—6x6 Chiidren's Fancy Ground 3 00
1—15 inch Smith & Pattison, Quadruplex Enameler, ... 25 00

Camera Boxes:

1—8x14 Flammang revolving back camera, double swing . . . 35 00
1—Kodak camera, with film for 60 pictures 19 00
1—3¼x4¼ English instantagraph, camera, lens, shutter and tripod 12 00
1—8x10 N. P. A. Camera, single swing 12 00
2—8x10 Novel Holders, each . 2 50
1—4x5 Flammang revolving back Camera, lens and tripod, new; reduced from $37 to . . . 25 00
1—17x20 American Optical Co.'s Double Swing Portrait Camera, Bonanza Holder, good as new 75 00
1—5x8 Blair View Camera, single swing 17 00
1—Climax Outfit, including chemicals, complete 3 50
1—5x8 Tourist Outfit, including 5x8 Tourist Camera Box, 2 Daisy Plate Holders, 1 Extension Tripod, and 1 Canvas Carrying Case, very little used. Price, new, $40.50, will sell for 30 00
1—10x12 Cone View Camera, Double Swing, new 52 80
1—5x8 Wet Plate Stereo Camera, 3 holders, case and tripod . 25 00
1—6½x8½ View Camera and Lens, ... 12 00
1—6½x8½ American Optical Co. first qual. View Camera . . 23 00
1—4¼x5½ Ex. qual. Portrait Camera 17 50
1—5x8 American Optical Co. Stereo Camera 25 00
1—5x8 Blair Compact Camera, good as new 35 00
4—5x8 Feather Weight Holders, each 75
1—5x8 '76 View Camera, with lens, holder, case and tripod 15 00
1—4x5 Anthony's View Camera, with lens, tripod, carrying case and six double holders in good condition 16 00
1—43 B. Climax Portrait Camera 8x10 with Benster Holder, . 20 00

Lenses:

1—No. 1 4x5 Darlot rapid hemispherical lens 12 00
1—21x25 Dallmeyer rapid rectilinear lens 210 00
1—¼-size Voigtlander lens . . . 5 00
1—pair E. A. Stereo Lenses . . 6 00